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EXECUTIVE SUMMARY

This report is a product of the Rutgers Center for Green Building, Edward J. Bloustein School of Planning and Public Policy at Rutgers, The State University. It was commissioned by the New Jersey Housing and Mortgage Finance Agency.

The objectives of this research correspond to and support the interest of these agencies in advancing green building in New Jersey. Specifically, this work identifies key success criteria among green building programs throughout the United States -- with a focus on the roles of information and incentive -- and translates these into actionable strategies. Data are drawn from an original telephone survey of 15, or approximately one-half of all green home building programs across the U.S., case study of 3 of these, from academic journals, trade magazines and green building websites.

There are between 30 and 40 active local and regional green home building programs in operation in the U.S., many of which are affiliated with the National Association of Home Builders (NAHB). Additionally, several municipalities and a smaller sample of states have developed their own green building policy initiatives, some of which are based on the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEEDTM) standard, others of which are homegrown. Green building in both the commercial and residential sectors tends to correspond geographically to these local and state initiatives, especially the more robust ones that include either tax credits for developers and/or regulation requiring one or more aspects of green building.

This research finds that often incentives play a larger role during the start-up and initial phases of green home building programs. Most target developers over homeowners/consumers. Incentives may include: grant awards; free or reduced-rate products/services; tax credits and exemptions; reduced inspection and permitting fees; expedited plan review; and density awards. For homeowners, special mortgage products may be available from participating financial institutions and rebates may be available through state energy and water efficiency programs.

The dissemination of information plays a continuous role throughout the various stages of these programs, although its nature may change as the program matures. Initial communications tend to be more general and extol the benefits of green building in light of their real or perceived costs. Later communications are more technical and targeted towards project implementation. In addition, many programs rely on strategic partnerships to disseminate information to broader audiences. With the notable exceptions of Built Green ColoradoTM the Aspen/Pitkin County, Colorado Efficient Building Program and the Town of Telluride, Colorado Green Building Program, green home building programs are voluntary. While newer local government policy initiatives appear to be more likely than older ones to be based on regulation, those that do contain a regulatory component tend to target public sector spending and address the commercial building sector.

Financing mechanisms for these programs vary, but many rely on solid waste funds/ trash taxes, building permit fees, and funding from utilities, government, charitable organizations, and the NAHB. Some programs, which incorporate the federal government's Energy Star program into their guidelines, claim also to be affiliated with it. Nevertheless, the substantive effort to

promote the spread of green building is occurring at state and local levels. The federal government, while an important player in promoting green building, has not pursued a national green building policy.¹ Thus, the successful diffusion of green building practice will depend in some part on the propagation of state and local green building programs and policies and the manner in which these are integrated.

Therefore, the challenge for local and state policy-makers is to develop and implement green building programs that appeal to the multiple audiences, recognizing that some participants stand to benefit and others will incur costs in green building. In this research, the role of developers is found to be paramount. While a program strategy will assume different forms in different places, the following steps have been found to help gain market acceptance among developers.²

- Find smaller projects first through which to break down barriers
- Bring together various programs (state or local level) or ordinances (local level) and place under one umbrella/coordinator
- Look for pressure points – pressing environmental issue to solve. Using this to piggy back a larger solution.
- Use these same issues to lobby for incentives – e.g., if water efficiency, incentives could come from the water company, if energy...and so on. Money creates interest!
- Hire a change agent (this is different than a champion, which comes from elected or non elected leadership)
- Provide cost/benefit studies and technical information, especially how-to process models and demonstration projects

Concurrently, it is important to educate consumers and municipal officials about green building. The programs that have been most successful in educating consumers have developed themselves into a household “brand”. The municipal perspective on green building programs depends largely on the nature of the program and the commitment of the government to the principles of green building and sustainability. If the local government supports the green building program it is a considerable aid to the program, particularly if the local officials are educated about the differences between conventional and green buildings so that they do not reject green innovation out of hand. Finally, policy leaders in green building need to be cognizant of market area characteristics. Most market-rate residential green building has taken place in economically strong markets in areas that are well above the U.S. average in income and educational attainment.

¹ Federal support for green building has been financial – e.g., the U.S. DOE helped to fund the development of the LEED green building guidelines and standards, and in-kind – e.g., through federal agency demonstration projects that incorporate green building. The federal Guide for Green Construction Specs is available at <http://fedgreenspecs.wbdg.org>. See, also, the U.S. Department of Energy’s Office of Energy Efficiency and Renewable Energy website (www.sustainable.doe.gov/buildings). Eight (8) federal agencies are LEED users (USGBC).

² (USGBC State and Local Committee, November 2004) and author’s edits.

The stakes in succeeding in green building are high. In the United States today, buildings account for nearly 35% of total energy consumed, and 65% of US consumption of electricity overall. Buildings intensify climate change by releasing carbon dioxide into the atmosphere through the use of electricity generated by the burning of non-renewable fossil fuels, or by burning carbon-based fuels within the building. In this manner, buildings account for 30% of greenhouse gas emissions. Buildings further account for 30% of raw materials use, 12% of potable water consumption, 30% of waste output and 28% of landfill material. Sick Building Syndrome -- the result of poor indoor air quality caused by a combination of toxic construction materials, toxic cleaning agents and energy efficient yet problematic air-tight construction -- may affect as many as 30% of new and renovated buildings. This constitutes a significant, if mostly invisible, health risk as the average American spends 90% of his or her time indoors.³

According to Arthur Nelson (2004, v) of the Virginia Polytechnic Institute,

“In 2030, about half of the buildings in which Americans live, work, and shop will have been built after 2000. The nation had about 300 billion square feet of built space in 2000. By 2030, the nation will need about 427 billion square feet of built space to accommodate growth projections. About 82 billion of that will be from replacement of existing space and 131 will be new space. Thus, 50 percent of that 427 billion will have to be constructed between now and then. Most of the space built between 2000 and 2030 will be residential space, which will total over 100 billion square feet of new space. The largest component of this space will be homes”.

By these projections, almost half of what will become the built environment in 2030 does not exist yet. The role of leaders, then, is to accommodate this growth in more sustainable ways.

The remainder of this document is organized as follows. Part One describes the key characteristics of green building innovation and diffusion in the U.S., including quantitative and qualitative measures of green home building programs and the local and state policy initiatives within which they are often embedded. Part Two examines success criteria and challenges of green building programs, focusing on roles of information and incentive. The paper concludes in Part Three provides policy suggestions targeted toward working with developers, municipalities and consumers to increase green building activity. Supporting data appears in Appendices A and B and includes contact information for green building programs, our interview guides, and transcripts from interviews.

³ *Environmental Building News*.(Volume 10, No 5: 2001)

PART ONE - INNOVATION AND DIFFUSION OF GREEN BUILDING

1.1 Background Information

Green building--the practice of 1) increasing the efficiency with which buildings and their sites use energy, water, and materials, and 2) reducing building impacts on human health and the environment⁴--promises to be the next generation paradigm of the built environment. Yet, accomplishing it will require overcoming the traditional philosophy of building construction and development and, thus, an array of institutional barriers. These include non-market (cultural) as well as market (structural) ones, the latter representing powerful vested interests.

Green building is neither new in concept nor execution. However, a growing concern over the linkage between the built environment, on the one hand, and the depletion of natural resources, environmental degradation and declining health, on the other, has led to a green building resurgence. This renewed interest coincided with the discourse surrounding the 1987 Brundtland Commission Report with its emphasis on sustainable development and has led to the promulgation of green building rating systems such as the U.K.'s BREEAM (Building Research Establishment Environmental Assessment Method) and, in the U.S., LEED (Leadership in Energy and Environmental Design). These programs attempt to account explicitly for the entire life-cycle of a building, from where and how it is sited through its construction and possible demolition.

The initial focus of the green building resurgence, in the early 1990s, was on single-family homes and, to a lesser extent, office buildings. Early examples of green building from this phase tended to be drawn from the high-end of the market and from organizations with environmental mission statements or concerns about their public image. The emphasis then gravitated towards larger more intensive building uses such as skyscrapers, apartment buildings, convention centers, shopping malls as well as university complexes and government buildings. Today, it is estimated that the U.S. Green Building Council's LEED program accounts for over 5% of the commercial market, expected to rise to 8% by 2006.⁵ This data includes in its count institutional, government and other not-for-profit uses. Indeed, the majority of green building during this phase has been in the public and not-for-profit sectors.

Within the last 6-9 months, the emphasis has shifted again, this time towards mainstream, single-family and, to a lesser extent, multifamily homes. At present, the number of single-family green homes is small. For example, on a cumulative basis, approximately 62,000 certified green homes had been completed between 1990 and 2004 and, in 2004, 360,000 homes had earned the Energy Star seal of approval. In 2004, alone, 1.6 million single-family homes were constructed.⁶ While there is some evidence that residential green building activity may be increasing -- approximately 25% (14,000) of these homes 62,000 homes were certified by various green home

⁴ The Office of the Federal Environmental Executive, *The Federal Commitment to Green Building: Experiences and Expectations*.

⁵ Popeck, *Green Building*.

⁶ Tassos, *A Greener Plan for Affordable Housing*. With attached housing, approximately 2 million units were constructed in 2004, a record breaking year.

building programs in 2004 compared to cumulative totals of 47,338 in 2003, 33,669 in 2002 and 20,881 in 2000. Yet, these homes are mostly up-market.⁷

According to many industry participants and observers, green building is not only one of the most significant developments in home building in recent years, it is revolutionary. By 2025 homes, for instance, are envisioned as net energy producers, not consumers. Evolving technologies that may characterize these homes include micro-turbines and fuel cells (along with photovoltaics) for generating energy, electro-chromic and thermo-chromic windows, greywater and rainwater irrigation systems and recycled water products, vacuum insulation, factory-built components or housing systems, and others.⁸

Yet, it seems unlikely that technological advances alone will lead to the mainstreaming of residential or any other form of green building. There are many structural features of the residential home building sector that negatively affect innovation. These include: 1) its highly competitive nature; 2) boom and bust cycles; 3) dominance by a few large firms on the one hand, and small and medium-sized firms, on the other – the former may be unwilling to champion a comprehensive green building typology and the latter do not have resources to innovate; 4) the fragmented nature of the industry which slows down information flows; and 5) lack of protection of intellectual property.⁹ Numerous barriers exist within and beyond the building industry, in related industries such as insurance, real estate sales and finance. To date, the numbers of registered and certified green buildings remains small.

1.2 Evidence of Green Building

In 2004, based on the LEED-New Construction standard, the USGBC counted nearly 1700 registered building projects and over 130 certified ones, up nearly 60% from 2003.¹⁰ As of April 2005, with the added benefit of the LEED -Existing Building and -Commercial Interior products, the number of registered buildings had increased slightly to 1,834.¹¹ Registered buildings are those that are in line to be certified by the USGBC.¹²

⁷ NAHB Research Center May 11, 2005 update by email to author.

⁸ U.S. Department of Housing and Urban Development (HUD) Partnership for Advancing Technology in Housing program (PATH) 2001 report.

⁹ Rand. 2003. Building Better Homes: Government Strategies for Promoting Innovation in Housing.

¹⁰ Author's calculations based on USGBC figures. Although the USGBC is not the only organization tracking green or environmentally-advanced building, its records are the most complete. Other data sources on green building include the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy and, for California, Flex Your Power, a statewide energy efficiency marketing and outreach campaign funded mostly by the California Public Utilities Commission. Both offer on-line case studies of buildings. Flex Your Power and the Smart Communities Network, an on-line project of the U.S. DOE, offer examples of municipalities with green building codes or ordinances, including those that do and do not invoke LEED. The Rocky Mountain Institute, a classic source on green building, a recently published CD includes building case studies with an introduction narrated by Robert Redford (!)

¹¹ USGBC, *April 2005 Green Building Fact Sheet*.

¹² The USGBC has a backlog of buildings to certify. Some of these buildings may not meet the criteria for certification and others will never be built. In January of 2005, these numbers have increased to 1775 and 154, respectively.

Of the 1,618 LEED registered buildings in 2004,¹³ for-profit corporations accounted for 406 (26%), followed by local government with 392 buildings (25%), and not-for-profit corporations with 309 (19%). In comparison to certified buildings, government and not-for-profit corporations account for a larger percentage (66% registered versus 60% certified). The percentage of registered buildings owned by government and not-for-profits appears to have risen from 2003 to 2004, although this sample is small and the ownership data is conflated.¹⁴ To a certain extent, though, this would not be unexpected. Of 13 states with LEED initiatives in 2005, 6 make some form of LEED certification mandatory for state building projects.¹⁵

Although there may be a few multifamily housing buildings in the mix, until now, the USGBC has not targeted either multi- or single-family residential building.¹⁶ However, the USGBC is in the process of developing its own rating product for the home building sector (LEED-H). It will provide a national standard yet target the top 25% of ‘greenest’ homes -- new construction, market-rate and affordable and up to 3-storied multifamily. The evolving LEED-ND (Neighborhood Development) standard, which is expected to be in pilot phase during 2006-2007, extends well beyond the building envelope to incorporate Smart Growth and New Urbanist principles, thereby combining residential and commercial uses. Approximately 40 local or regional green home building programs operate throughout the U.S, most of which are affiliated with the National Association of Home Builders (NAHB) and its green building guidelines released in 2003.¹⁷ These NAHB affiliated programs account for a large percentage of green home building in the U.S. (see **Figure 4**).

In 2005, there was at least one LEED certified or registered building in each of 50 states, although 10 states account for more than half of all registered projects.¹⁸ In order of greatest to least these are: California → Pennsylvania → Washington → Oregon → New York → Massachusetts → Texas → Michigan → Illinois → Virginia. By gross square footage rather than by numbers of buildings, this order becomes: California → New York → Pennsylvania → Washington → Illinois → Michigan → Massachusetts → Texas → Oregon → Virginia. In contrast, green homes are concentrated in fewer states: e.g., Colorado, Texas, Washington, New Mexico, Georgia, Oregon, Wisconsin, California, New Jersey, Arizona, in this order of occurrence.¹⁹

Figure 1 illustrates LEED registered projects by owner type. **Figure 2** depicts the incidence of LEED projects by state location. A complementary analysis of “early adopter

¹³ USGBC website. www.usgbc.org

¹⁴ For-profit entities are known to collaborate with not-for-profit ones to obtain financial and technical assistance, but it is not clear how or if this collaboration is recorded. Author’s interview of Kara Grigson, Environmental Policy Center, San Francisco, CA (October 2004).

¹⁵ USGBC, *Users Summary Government Sector*. Included in this count are states that have executive orders that require LEED certification, but not those that stop short of an absolute requirement. On this basis, New Jersey which requires that schools incorporate LEED guidelines but does not require certification is not in this count.

¹⁶ Multifamily homes that are more than 3-stories are currently covered under LEED-NC (New Construction). As of yet, there are no development plans for an existing home program. Source: USGBC website.

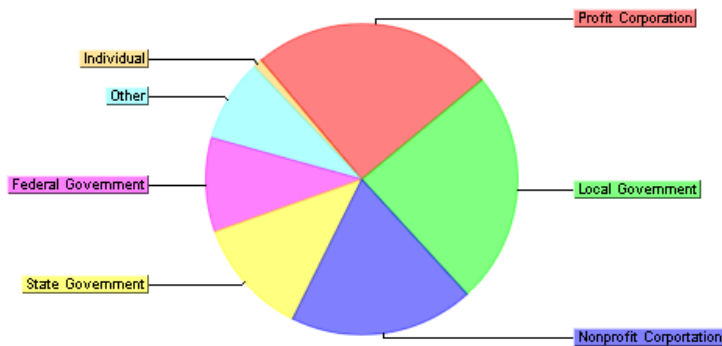
¹⁷ There are between 30 and 60 programs depending on whose qualifying criteria are used. For example, the Green Affordable Housing Coalition lists close to 60 “green building programs & resources” most of which probably address residential building in some fashion or another. The USGBC lists 40. The NAHB qualifies 30.

¹⁸ USGBC website.

¹⁹ This ranking is based on 2004 cumulative data from NAHB.

states” has been developed by Furey (2004) and appears with permission of the author as **Figure 3**, in which states with ten or more LEED certified buildings are depicted with stripes. In this analysis, Furey defines early adopter states as those with more than four LEED certified buildings where at least fifty percent of them are owned and operated by for-profit companies. These states are shown in green and do include several states with strong green home builder programs, if not most of the leading ones. Finally, **Figure 4** illustrates the cumulative incidence of certified green homes for the top 10 state locations in 2004.

Figure 1 LEED Registered Projects by Owner Type - New Construction



NOTE: Pie chart is based on the number of projects. Some projects contain multiple owner types; do not sum for grand total.

Source: U.S. Green Building Council, 2004 data.

Figure 2 Registered Projects by State – Top 10 LEED -NC®

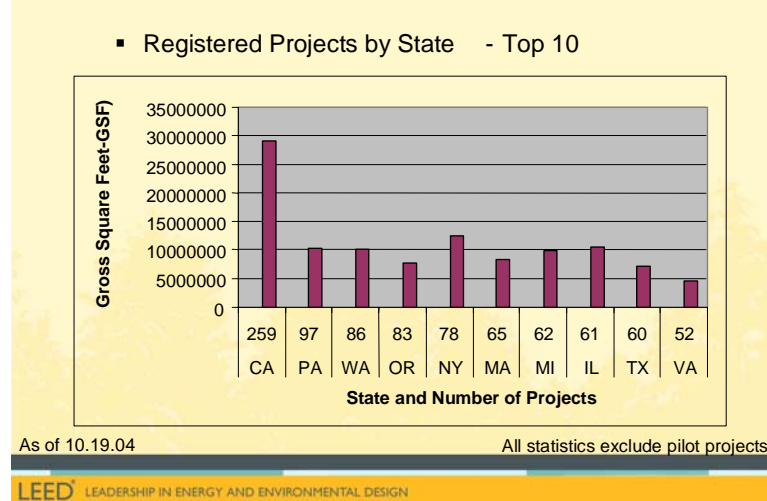


Figure 3 Early Adopter States

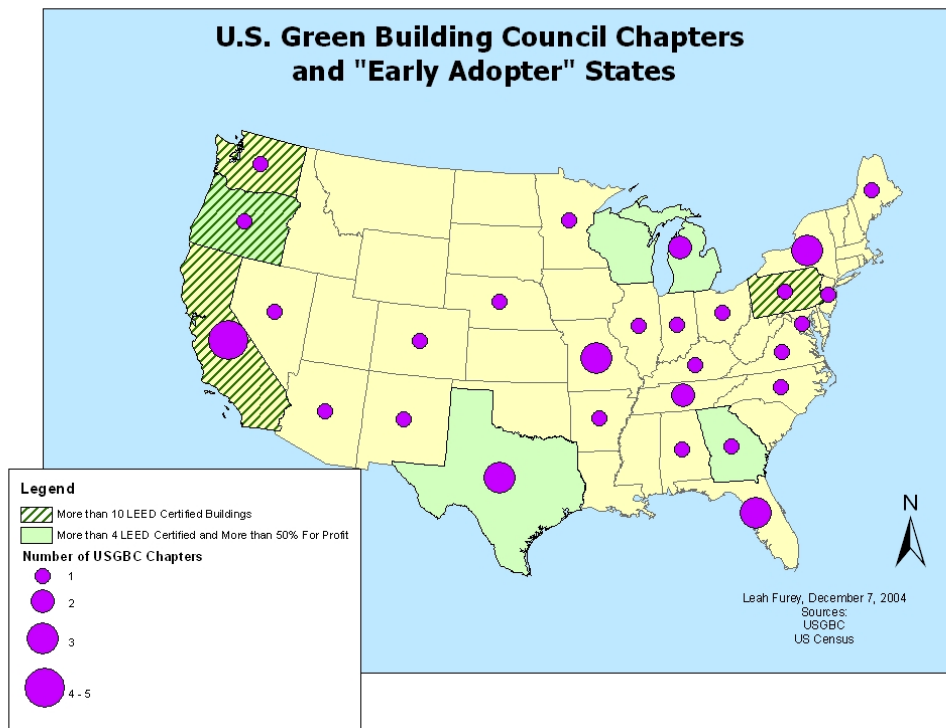
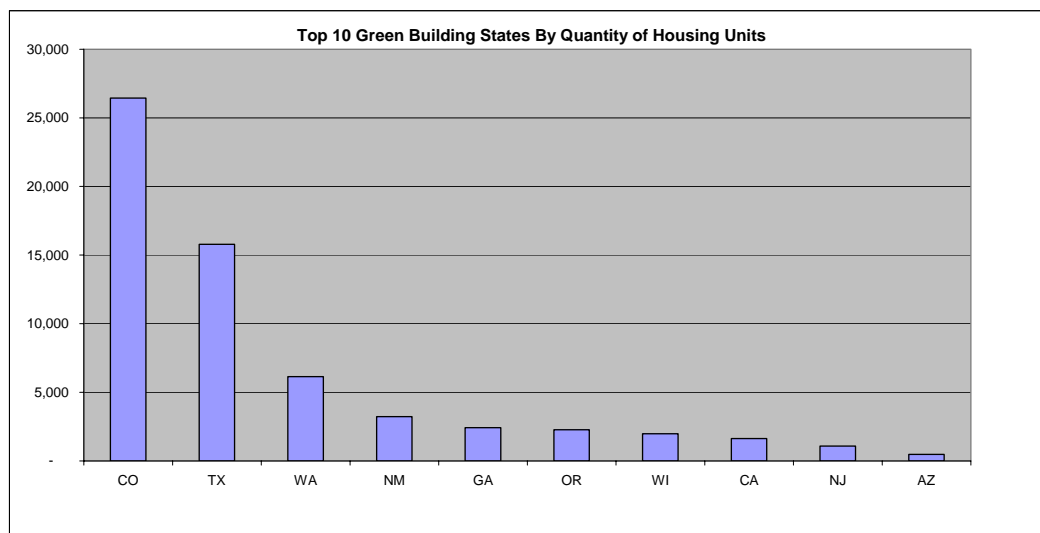


Figure 4 Number of Certified Green Homes Built 1990-2004 Cumulative Totals



Source: National Association of Home Builders June 2005 data and author's calculations.

PART TWO - INFORMATION AND INCENTIVE IN GREEN BUILDING

2.1 Green Building Initiatives

The substantive effort to promote the spread of green building is occurring at state and local levels. The federal government, while an important player in promoting green building, has not pursued a national green building policy.²⁰ Thus, the successful diffusion of green building practice will depend in some part on the propagation of state and local green building programs and policies and the manner in which these are integrated.

Local and state governments have at their disposal a variety of policy tools for influencing the diffusion path(s) of green building. Regulatory tools of green building may include code and performance ordinances and also contract specifications and procurement policies. Development incentives and tax credit/abatement programs can be employed to encourage green building, in addition to availing of state tax credit programs where they exist. Governments can also implement disincentives for non green building – e.g., through the imposition of a “green tax” on conventional polluting technologies and methods. The strategic use of information may complement any of these. Governments can offer green building training and education programs, and create community boards and commissions to study and review green building.

As of April 2005, there were 35 local green building initiatives (municipal + county) LEED policy initiatives in effect in the U.S. and a handful of others not based on LEED.²¹ Twenty-four (24) local initiatives were located in states with statewide LEED programs, of which 13 are in California, 4 are in Washington, 2 are in New York and 2 are in Oregon. All these states except Washington, which has very strong green building legislation, provide incentive programs.²² And, there is a close, if imperfect, correspondence between these initiatives and those states that lead in certified/registered green buildings. Specifically, New York and Oregon both have tax credit programs, which originate in energy efficiency considerations, and which require LEED certification.²³ California makes available cash incentives to promote the construction of high-performance buildings. The state of Washington

²⁰ Federal support for green building has been financial – e.g., the U.S. DOE helped to fund the development of the LEED green building guidelines and standards, and in-kind – e.g., through federal agency demonstration projects that incorporate green building. The federal Guide for Green Construction Specs is available at <http://fedgreenspecs.wbdg.org>. See, also, the U.S. Department of Energy’s Office of Energy Efficiency and Renewable Energy website (www.sustainable.doe.gov/buildings). Eight (8) federal agencies are LEED users (USGBC).

²¹ There were also about a half-dozen pending some formal action (not included in this count). Note that while some of these do not explicitly refer to residential construction, there is no reason to believe that they exclude them either.

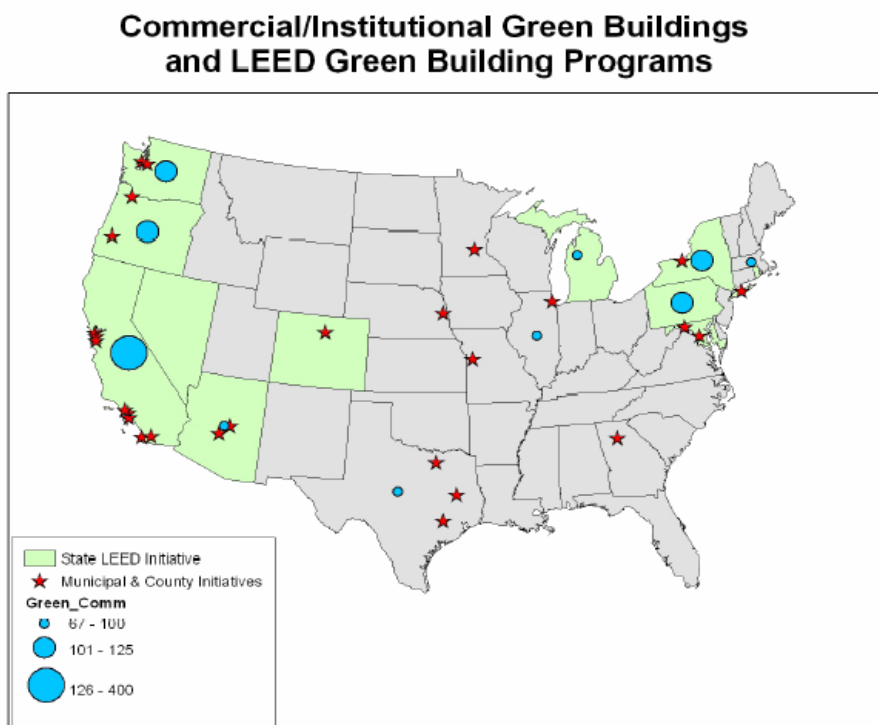
²² This, admittedly, is a tough category. I have included in this count only statewide incentive programs, run by the state, that target green building and which include market-rate building activity. Many more states have separate Smart Growth, Energy Smart, and/or affordable green housing incentives. Also, many community investment funds and not-for-profits now support green building. Sources: USGBC, *Users Summary*; web research.

²³ NY State Green Building Tax Incentive Program <http://www.dec.state.ny.us/website/grnbldg/index.html>
Oregon Business Energy Tax Credit Program: <http://www.energy.state.or.us/bus/tax/sustain.htm>

requires state-funded projects over 5,000 SF, including school district buildings to achieve LEED silver certification.²⁴

A total of 19 local initiatives are clustered on the west coast, known as the home of green building. There are also smaller clusters of initiatives in states without LEED programs. These include 4 in Texas, 2 in Massachusetts, 2 in Illinois and 2 in Missouri. These relationships are summarized in Figure 5, below.

Figure 5



In 2005, fully 33 of these initiatives contained a mandatory/regulatory component. In almost all cases this means that green building is required for government buildings and sometimes for private projects utilizing public finance. There are, however, exceptions. For example, the municipality of Calabasas, CA requires all non-residential, city and privately-owned buildings between 500 SF and 5,000 SF to meet the LEED Certified level. Buildings over 5,000 SF must meet a LEED Silver level (USGBC).

Of the initiatives containing a mandatory/regulatory component, six are also incentive-based. Five (5) local initiatives contain only a voluntary/incentive-based component. Newer initiatives are more likely to contain a mandatory component than older ones, although there is not much data on which to base this conclusion.²⁵

²⁴ USGBC, *Users Summary*.

²⁵ Necessarily, judgment calls were made in producing these tallies. Since the last time this data was updated by the author (December 2004) and mid-year 2005, several entries moved from the incentive to the regulatory column and from being classified as a non LEED program to LEED.

Specific examples of financial and in-kind incentives or blends of regulations and incentives for the private sector include the following.

- Arlington County, VA and Acton, MA have initiatives whereby density bonuses are used as incentives to builders. In Acton, LEED certification is required. In Arlington County, it is used as a benchmark, or guide.
- In Santa Barbara, CA incentives include expedited plan review and free design guidance for energy efficiency. The County Planning and Development agency also has established an Innovative Building Review Committee to eliminate obstacles to energy efficient green building techniques.
- Issaquah, WA projects achieving LEED certification are placed at the head of the building permit review line.

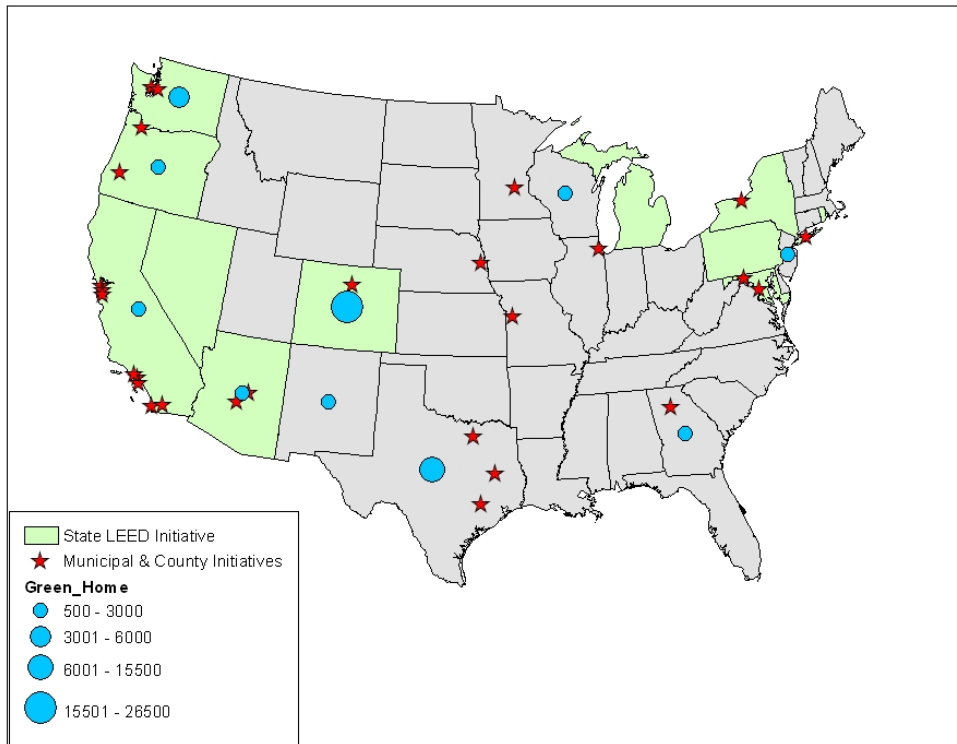
Many other local governments encourage green building through the provision of incentives that are essentially informational tools, such as technical assistance and marketing support. Austin, TX and Scottsdale, AZ have particularly strong reputations in this area; Austin is reportedly developing a template to assist other communities in starting municipal and especially residential green building programs. Both of these cities host very strong green home building programs. The Scottsdale initiative, which reports that green building permits have reached 21% of the home market, includes incentives for both home builders and owners.²⁶

Next, consider green home building programs and their relationship to the data above. (Contact information for 40 of these programs is given in **Appendix B**.) Many are affiliated with local and regional Home Building Associations (HBAs) of the NAHB and/or with local government initiatives. Two (2) are programs of the U.S. DOE. Five (5) are located in California, 4 in Washington, and 3 each in New York, Texas and Arizona. There are 2 programs each in Colorado, Oregon and North Carolina. As with the local policy initiatives, there is a cluster of programs on the west coast. Of the leading states in this set--Colorado, Texas, Washington, New Mexico--none offer financial incentives to the private sector that are specific to green building, while one, Washington, requires LEED certification for state-funded projects (as above). On the other hand, many of these states have Smart Growth and Energy Efficiency initiatives that certainly apply to one or more aspects of a green building methodology and thus have building blocks for a (comprehensive) green building initiative in place.

²⁶ Popeck, *Green Building*.

Figure 6

Residential Green Buildings & Green Building Programs



In the main, these programs are organized around similar principles and standard green building processes. They tend to be performance-based, although there are ideological differences in the extent to which they promote change and in the method to achieve it. For example, the NAHB emphasizes that their guidelines are NOT meant to be adopted by municipalities. Unlike the USGBC/LEED, which includes in its mission the ‘greening’ of building code and tends to view building code as a barrier, the NAHB guidelines have been designed to meet or exceed code, without contravening it. Some programs include only one performance level (EarthCraft). Others go up to five levels (Austin). Some call for self-certification (Built Green Kitsap). Others require 3rd party certification (Scottsdale).

The programs also differ in how they reflect local and regional environmental and economic imperatives. For example, the EarthCraft House program in Georgia awards half of its points to energy efficiency and half to other green building techniques. As such, it considers itself a “southeast” program. Accordingly to its principals, the program adds 1-3% to the base price of a house, but these costs are recovered through decreased utility costs for the owner.²⁷ Interestingly, some builders in the region – e.g., Dennis Connell – guarantee utility bills for the first several years in the sale of the house. In the near future, the Atlanta EarthCraft program intends to require Energy Star in its homes. The USGBC, too, has recognized the importance of regional variation and is moving toward incorporating regionally weighted standards.

Although there are instances of incentive and regulation in these programs, information is an indispensable policy tool. A good example is Built Green Colorado, a mandatory program which is also the nation’s leading program. The Home Builders Association of Metropolitan Denver introduced this first HBA-owned green building program in 1995. Built Green has successfully used a “green parade of homes” (at Lowry Air Force based, now being adaptively re-used as homes), an outdoor education center, model homes, and an extensive \$1 million one-year public education and advertising campaign to erect some 13,500 homes.²⁸

For purposes of this research, the Center interviewed 15, of the nation’s approximately 40 green home building programs and then conducted 3 program case studies. We learned that a typical green building program adheres to the following informational sequence.

1. Program publicizes benefits of owning a high performance or “green” building through newsletters, booklets, or the web with the intent to generate interest from the building industry.
2. Interested parties can join their local green organization. Membership usually requires attending a seminar followed by a written exam. Certification to individual organizations is granted upon passing exam. Participating builders must then attend a given amount of seminars annually to maintain their certification.

²⁷ This data is from the author’s tour of Earthcraft Homes with the program’s principals in Atlanta during the National Green Building Conference of the NAHB March 13-15, 2005.

²⁸ It is also interesting that out of Built Green Colorado, the Municipality of Aspen, County of Pitkin, and municipality of Telluride Colorado adopted their own mandatory green building programs. They used Built Green Colorado as the basis and adopted the program to suit their individual needs through the public process.

3. Upon being granted certification, participating builders use their local green building program to obtain technical and marketing assistance to reduce the energy use and environmental impact of the buildings they construct. Local programs typically establish green guidelines and verify compliance on a project-by-project basis.
4. If participating builder complies with green building guidelines, s/he may display signage with recognizable logos in front of new building letting potential buyers know this particular builder is committed to offering a superior product.

A complementary summary of direct and indirect program incentives, including those based on informational strategies has been produced by the research center of the NAHB.

Direct incentives that offer benefit directly to the developer:

- *Recognition* – Free promotion on web sites, events, press releases and publications, free case study fliers, etc.
- *Reduced inspection and permitting fees* – fee reductions or subsidies for projects in compliance with green building or energy/water efficiency standards.
- *Expedited plan and field check* – projects given administrative priority (placed at the front of the line) reducing processing time from 20% to 50%.
- *Code/Zoning variances* – such as density bonuses for cluster development and other smart growth strategies.
- *Tax credits/exemptions* – Tax relief on all or part of allowable costs of developments that meet green and smart growth standards, often in alignment with comprehensive plan goals.
- *Monetary awards and rebates* – competitive grant programs to fund innovative projects that meet energy and water conservation, waste minimization or smart growth goals.
- *Below-market capital* – Revolving, low interest loan funds and extended payment options often used to incent efficient use of existing utility or building infrastructure (i.e. infill and existing structure development)
- *Free or reduced-rate products and services* – utilities providing compact fluorescents, low-flow shower heads etc. Training and free design support to project design teams, construction site management teams, etc.

Indirect incentives that offer benefit to the consumer, but which may enhance the marketability and competitiveness of the developer's homes:

- *Special Mortgage Products* – Below market financing for homes built to green building or smart growth standards.
- *Tax incentives* - property tax relief for property improvements (including new construction) to green building/smart growth standards.

Often, but not always, incentives play a larger role during the start-up and initial phases of green building programs. Most green building programs target developers over home owners/buyers and the incentives they offer reflect this. The dissemination of information plays a continuous role throughout the various stages of these programs, although its nature may change as the program matures. Whereby initial communications tend to be more general and

extol the benefits of green building, as well as their real or perceived costs, later communications are more technical and targeted towards project implementation. The much heralded Austin, TX Green Building Program is the classic example of this evolution.

Our interview responses are included as **Figure 7** and the case studies follow thereafter. Of interest is the diversity in the numbers of builders affiliated with programs, funding mechanisms and incentives, policies/innovations, rating system descriptions and membership fee. The numbers of homes certified in 2004 was also provided in some cases by these organizations, but it is believed that the data provided by these same organizations to the NAHB (as earlier referenced) is more accurate.

Figure 7. Green Home Building Organizations – Interview Responses								
Organization	Founded	# of Builders Affiliated	Rating System	Membership Fee	Number of Homes Certified in 2004	Funding	Financial Incentives	Unique to This Organization
Vermont Builds Greener	2005	4	Follows Energy Star guidelines with additional standards for indoor air quality and lighting	\$450	394	Membership fee, a state grant, state also contributes small labor force.	Incentives in the range of \$160-\$1,300 are available through the organization. The local gas utility company offers a \$500 incentive, local electric also offers a small incentive	Program compares number of bedrooms to number of occupants in the home
Wisconsin Green Built Home Madison, WI	1999	50	Builders must achieve 60 of the 300 total points offered	\$200 + \$50 per home added	1000	Membership fee and fee per home	None	The “Efficiency of space” category encourages homeowners to build “up” rather than “out”

An Analysis of Residential and Local Green Building Initiatives: The Roles of Information and Incentive

Ecobuild Memphis, TN	2003	7-10	Builders must meet all criteria outlined on checklist. Must pass a duct leakage test of 10% or less	\$300	12	Membership fee	If entire subdivision qualifies for Ecobuild, utility company will waive \$865 unit connection fee	In the process of certifying the “uptown” community in Memphis. This will be one of the 10 largest green communities in the country
Built Green Kitsap County WA	1997	15-20	Rating system based upon 2 levels—1, 2 or 3 stars. There are 4 categories for ratings depending on type of building	\$100 + \$50 per project	Figure not known	Membership fee and subsidies from solid wastes department	Some small grants are subsidized by the HBA	The state of Washington has 8 separate built green programs. One of the highest in any state
Built Green Colorado— metro Denver area	1996	All Buildings	*The Green Points program is part of code compliance in Boulder. Without meeting the requirements, permit is not issued	-	All Homes	Building permit fees, trash tax, waste diversion program	*Compliance with Green Points is mandatory through the city of Boulder	Number of points needed for permit increases as the size of home increases. As the home grows in size, one must comply with a greater percentage of options

An Analysis of Residential and Local Green Building Initiatives: The Roles of Information and Incentive

Green Built, Inc. Grand Rapids, MN	2001	14 Builders 13 Associate Members	Based on the Energy Star 5 Star program plus an additional 120 points. Builder must reach 86 of these 120 points.	\$175	25-30	Membership fee and \$10,000 grant from state	None currently; Green Built is looking into incentives with lenders for home loans for green buildings	-
Green Roundtable Cambridge, MA	2001	-	LEED rating system most common in Massachusetts	Separate Fee structure for individuals, students, corporations, and public-sector groups	-	Membership fee, and small grants	Does not work directly with builders and homeowners	-
Green Home Pilot Program Schenectady, NY	2005	-	Rating system in draft phase. Will be calibrated on a point system	Fee structure to be determined	-	Funding yet to be determined	-	-
North Carolina Healthy Built Home Program	2001	6	Point rating system yields four levels of classification: certified, bronze, silver and gold	\$900 per home; includes Energy Star Certification, HVAC testing, framing inspection	-	Funding primarily through a grant from the Dept. of Affordable Housing	None	Program guidelines cover entire state of North Carolina rather than being regionally based. Program hopes to lower certification fee as demand rises

An Analysis of Residential and Local Green Building Initiatives: The Roles of Information and Incentive

GreenHOME Washington, DC	1999 with new initiative s for 2005	6-10	Works directly with developers and Habitat for Humanity; does not implement a certification system	No Fee	Not yet deter- mined	Funding through donations and sale of book <i>Green and Lean</i>	Exploring more immediate incentives for developers since they will not benefit from building's long-term payback	GreenHOME has targeted 60 neighborhoods in DC, VA, and MD. This advanced planning is to avoid any potential NIMBY issues from existing neighborhoods
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Source: Author's interviews and research.

Case Studies

Case Study #1

EarthCraft House/Southface, Atlanta, Georgia – March 2006

PROGRAM STRUCTURE

EarthCraft House is a program in Atlanta, Georgia that provides green certification for homes in the area. EarthCraft House was initiated in 2000 by several key groups who recognized that Atlanta was a rapidly growing housing market without a green building program in place. EarthCraft House was formed as a partnership between Southface and the Greater Atlanta Home Builders Association (GAHBA). The Department of Energy has also played a strong role in supporting EarthCraft House. Southface is a non-profit organization which has been operating in the Atlanta area for more than 25 years and has been recognized by many agencies for its excellent environmental education and outreach programs. EarthCraft House continues to be closely connected to Southface.

EarthCraft House is a voluntary program and is administered as a non-profit organization, not connected to the Atlanta city government. Certification is based on a project receiving 150 points. For a builder to receive certification for their project s/he must join the GA HBA and EarthCraft House, attend a one-day training program, participate in a design review, and participate in a walk-through with EarthCraft House staff. The points system was used as a way to give builders options and in the hope that builders might begin to compete to see who can achieve the most points. The points system also allowed EarthCraft House to introduce new technologies to builders and to educate builders about these new technologies without requiring that builders use them.²⁹

EarthCraft House also has a multifamily and community certification. The EarthCraft Communities program is a new addition to the program. Each community should have at least 100 units, and each home in the community must be EarthCraft House certified. The EarthCraft Communities operates on new urbanist principles and seeks to create communities that are mixed-use, walkable, transit-friendly, and have preserved open space. Several communities are already involved in the pilot phase of this program.

HOW IS 'GREEN BUILDING' DEFINED?

The EarthCraft House program's points are arranged into twelve categories, which are listed below. The program also has basic requirements in many of the categories which must be met before a project can achieve any points in that category. The distribution of the points shows a strong interest in achieving energy efficiency, especially through the use of building materials and HVAC systems. However, the program also makes a point of including both the builder's operations and the homebuyers' education in the points system. Bonus points are also available for achieving other certifications, such as LEED-H and Energy Star, or including additional green features, such as solar panels. One hundred fifty (150) points are necessary to achieve the EarthCraft House certification and any combination of points is valid.

²⁹ From email interview with Rob Johnson, Director of EarthCraft House

Categories:

Site Planning (32 pts available)
Energy Efficient Building Envelope and Systems (228 pts available)
Energy Efficient Lighting/Appliances (12 pts available)
Resource Efficient Design (40 pts available)
Resource Efficient Building Materials (68 pts available)
Waste Management (28 pts available)
Indoor Air Quality (106 pts available)
Water – Indoor (32 pts available)
Water – Outdoor (36 pts available)
Homebuyer Education (21 pts available)
Builder Operation (13 pts available)
Bonus Points (72 pts available)

SUCCESSFUL STRATEGIES

Developers in the area seem to consider EarthCraft House to be a successful program. This is mainly due to the large number of houses built (over 2000) and the ability to attract local developers, particularly large developers. EarthCraft focuses heavily on its marketing and educational programs, and these have been largely responsible for the program's success.

MARKETING

EarthCraft House has become a recognizable brand in the Atlanta area (and beyond). Each EarthCraft House has a sign showing the EarthCraft House logo in the yard and there are also labels on the HVAC equipment. EarthCraft House's partners also work to promote the program. Home Depot, one of the EarthCraft House partners, even offers a line of EarthCraft House products in area stores. These include low-voc sealants and caulks, wheatboard and other green products. EarthCraft House also puts out a quarterly publication to keep the public aware of the organization's activities.

EDUCATION

Education is the other cornerstone of the EarthCraft House program. The general EarthCraft House seminars are open to anyone, but there are also specific certifications offered to contractors and vendors. These certifications involve intensive training and examinations. EarthCraft House has also worked to educate building inspectors about green technologies that may not be familiar to them. This can help to ensure that plans are not rejected because they employ new technologies. Green building education also helps builders and homebuyers to see that green building is the right thing to do. According to Dennis McConnell this is the biggest draw of the program. It offers builders a way to do what is right without extraordinary costs.³⁰

OUTREACH

EarthCraft House has made a point to reach out to the community beyond marketing and training. One example involves the organization's work with the Initiative for Affordable Housing. For example, this non-profit developer was in the process of designing an affordable multifamily building when approached by EarthCraft House. EarthCraft House was able to

³⁰ From telephone interview with Dennis McConnell, President of McConnell Homes.

obtain a grant to cover the cost of its advisory services and then proceeded to educate both the developer and the contractors and subcontractors about green building. Both the developer and the tenants were very pleased with the outcome and the Initiative for Affordable Housing has gone on to include EarthCraft House in a senior housing project.³¹

CHALLENGES FACING THE PROGRAM

Building Interest

Building interest in green building is a serious challenge for EarthCraft House. The organization has been very successful in gaining recognition through its marketing campaign and the work of its partners, but for the program to be a true success there must be increasing product demand. As energy prices have risen, greater interest has developed in energy efficiency, but other (non green building related) aspects of the home are still far more powerful in swaying the decision of which home to buy. Those who do participate in the EarthCraft House program seem to do so more out of sense of doing the right thing than out of recognition of profit.

In the non-profit development world the story is slightly different. As many developers of affordable housing continue to own the units they build the benefits of green building relate more directly to them. Greater durability and lower utility costs can provide direct benefits to the developer. However, the initial cost increase can seem too daunting to many developers of affordable housing, and this is exacerbated by the fact that the funds for building the housing are usually completely separate from the funds for maintaining it once it is built.

AREA CHARACTERISTICS

Atlanta has been growing rapidly for the past 40 years. Each decade since 1960 has seen close to 30% population growth and from 1990 to 2000 the population grew by almost 39%. This area is experiencing rapid transition. As of the 2000 census roughly 36% of the adult population was college educated and the median income was close to \$50,000. Atlanta has been gentrifying rapidly over the past decade, so there has been a great deal of infill development and a rapid influx of higher income individuals.

GREEN BUILDING IN ATLANTA

Atlanta can be a difficult city in which to get a building permit. According to Dennis McConnell of McConnell Homes it can cost \$10,000 to \$15,000 to prepare a building application for a small urban lot, and on average it takes 85 to get an approval or rejection. These constraints make many builders unwilling to include green features in their building for fear of holding up the approval process. However, there are builders who are familiar with the process and regularly get such buildings approved. Mr. McConnell also says that he can get a very good EarthCraft House rating on a \$750,000 home for an increase of only 1.2% in cost and can achieve the base 150 points needed for certification for an increase of only .03% in cost.³² The affordable housing projects examined claimed a cost increase of 2% to 3% for their projects without the inclusion of solar panels, which tend to be very costly.³³

³¹ Telephone interview with Lisa Wise, Director of the Initiative for Affordable Housing.

³² Telephone interview with Dennis McConnell, President of McConnell Homes.

³³ Telephone interview with Lisa Wise, Director of the Initiative for Affordable Housing.

RESPONSE TO PROGRAM

Responses of Developers

There has been a strong response among developers to the EarthCraft House program, as shown by the fact that more than 2000 homes have been certified. The rigorous standards of EarthCraft House make warranty and quality control issues less of a problem for builders and also allow them to differentiate their product from other homes.

However, there are also many builders who have chosen not to join the program. Dennis McConnell is a for-profit builder who has chosen to join the program. He says that he is a member of the EarthCraft House program because “it is the right thing to do,” but he says that many other builders don’t care or they see joining the program as too much extra work.³⁴ Lisa Wise, of the Initiative for Affordable Housing, has a slightly different view of things. She has found contractors to be interested, if not educated, in green building, but she also finds that her peers aren’t paying much attention to green. She believes that it will take outside forces, like rising energy costs, to get builders of affordable housing to pay attention to the benefits of green building.³⁵

Responses of Code Officials/Planners

The perception by some builders is that building inspectors and code officials in this area are generally uninformed and uninterested in green building; however they are willing to be educated in some cases. They do not seem to be standing in the way of green building or supporting it. One builder also stated that the code officials “don’t really enforce code for energy matters.”³⁶

Responses by Public/Consumers

Customers seem to have a minor interest in green building. According to Dennis McConnell, if a customer is choosing between an EarthCraft House home and one with pretty doorknobs, the customer will chose the one with pretty doorknobs.³⁷ Tenants of green affordable housing have shown a more clearly positive view of green building. Tenants of Kirkwood Gardens and Magnolia Circle, both developed by Initiative for Affordable Housing, report being pleased with their homes and very happy with the lower utility bills.

Customers have, however, been pleased that the EarthCraft Homes receive a third-party inspection. The public is somewhat distrusting of the builders in this area, so the EarthCraft House logo has come to represent an assured high quality of building.³⁸

³⁴ Telephone interview with Dennis McConnell, President of McConnell Homes.

³⁵ Telephone interview with Lisa Wise, Director of the Initiative for Affordable Housing.

³⁶ Telephone interview with Dennis McConnell, President of McConnell Homes.

³⁷ Telephone interview with Dennis McConnell, President of McConnell Homes.

³⁸ Email interview with Rob Johnson, Director of EarthCraft House.

Case Study #2

Green Built Home, Madison, Wisconsin – January 2006

PROGRAM STRUCTURE

Green Built Home (GBH) is a non-profit organization that provides certification for green homes in Wisconsin. GBH was formed in 1999 by the Wisconsin Environmental Initiative (WEI) and the Madison Area Builders Association (MABA). Madison had already initiated energy conservation programs, and a growing interest in green building in the Madison area led to the creation of GBH.

Green Built Home provides certification for new single-family homes, multifamily homes, and remodeling. It also provides marketing, education, and consulting services. To obtain certification a project must meet certain basic requirements and must obtain a set number of points. Points are obtained by incorporating green features into the structure, meeting certain siting requirements, reducing construction waste, and using approved materials.

HOW IS 'GREEN BUILDING' DEFINED?

A review of the points available through the Green Built Home program reveals a comprehensive approach to defining green building. Points are awarded for landscaping, built area, and builder operations in addition to the points awarded for the structure itself. However, the availability of the points also reveals a strong focus on energy efficiency and materials selection. Below is breakdown of the points available and required for each area.

Categories:

Siting and Land Use (12 pts available)

Landscape Conservation and Stormwater Management (31 pts available, 3 pts required)

Energy Efficiency (71 pts available, 10 pts required)

Materials Selection (92 pts available, 6 pts required)

Indoor Air Quality 5pt (48 pts available, 5 pts required)

Water Conservation (13 pts available)

Waste Reduction 1pt (16 pts available, 1 pts required)

Builder Operations (14 pts available)

Efficient Use of space (17 pts available)

SUCCESSFUL STRATEGIES

Partnerships

Having the Madison Area Builders Association as a major partner provided the perception that the program was “for builders by builders,” making builders feel included in the process. This has led to considerable buy in by the builders.³⁹ Over 50 builders are members of GBH and more than 850 homes have been certified by the organization.⁴⁰ This partnership has led to current members of GBH training and providing informal assistance to other builders.

GBH has also developed a strong partnership with the local utility, Madison Gas & Electric (MG&E). MG&E has provided financial support and has sponsored GBH events. These partnerships have been essential to the viability of GBH.

³⁹ Telephone interview with Nathan Engstrom, Director of Green Built Home.

⁴⁰ Telephone interview with Ashleigh Ellingson of Green Built Home.

Coordination with Building Codes

GBH has been successful in keeping their requirements from conflicting with the state building codes. Certification by GBH is completely separate from approval by code officials and the points were designed so as not to conflict with the state building code. The flexibility inherent in the point system also makes any potential conflict easily avoided. This flexibility also ensures that projects with many different combinations of green features can all be certified.

CHALLENGES FACING THE PROGRAM

Public Awareness

Reaching the public and making the public aware of the benefits of green building has been one of the greatest challenges facing the GBH. The program started with a strong focus on builders, educating them about green building and bringing them into the fold. However, building demand for green building has proven more challenging. Currently, the GBH reaches small groups at trade shows and community fairs, etc., but the organization does not have the resources to devote to a full marketing campaign.⁴¹

The long product cycle of homebuilding exacerbates this problem. Only a small percentage of people convinced of the benefits of green building are currently seeking these homes. This means that not just the general public, but specifically current homebuyers need to be convinced to buy green homes. Without this increase in demand, builders could begin to question the viability of the program and stop supporting it.

Funding

GBH faces the same funding concerns as other non-profit organizations. It is not directly funded through any state, local, or federal funds. It receives dues from its members and modest fees from certifications, but it must continually seek grants to continue its work.

INCENTIVES

GBH does not offer any direct incentives to builders or homebuyers. However, the Wisconsin Focus on Energy program provides both information and direct incentives for energy efficiency technology. These incentives can lower the cost of incorporating green features into construction projects. GBH has also begun to consider direct incentives as the next step in promoting green building.⁴²

AREA CHARACTERISTICS

Madison has been growing steadily over the past 30 years, with a population increase between 11% and 16% each decade. The household median income was \$41,941 in 1999 and approximately 48% of the population has at least a college education. George Hank, Chief of Building Inspection for Madison, describes the city as being “in the middle of a growth boom.”⁴³ The city has seen intense growth in the construction of condominiums as demand for urban housing increases.

⁴¹ Telephone interview with Nathan Engstrom, Director of Green Built Home.

⁴² Telephone interview with Nathan Engstrom, Director of Green Built Home.

⁴³ Telephone interview with George Hank, Chief of Building Inspection for Madison.

GREEN BUILDING IN MADISON

Although the Green Built Home program applies to all of Wisconsin, Madison is the center of the nascent green building movement in Wisconsin. Madison is seen as a progressive town, interested in social and environmental issues. Financial incentives for energy efficiency are already in place. Also, Veridan Homes, the largest participant in the GBH program is centered in Madison. Mark Hopkins with the Mandel Group, a builder in the Madison area, describes homebuyers this way, “they like to see green building, but are not necessarily willing to pay a premium for it.”⁴⁴ Another builder in the area, Leon Church, agrees that he isn’t yet able to charge a premium for green building, but he “expect[s] this movement to be huge.”⁴⁵

RESPONSE TO PROGRAM

Responses of Developers

Many developers were initially resistant to the GBH program. It was seen as time consuming and unnecessary. However, through a strong partnership with the Builders Association and outreach programs GBH has won over many developers, especially in the Madison area, where environmental awareness is at its strongest. Demand for green building and the ability to use it as a marketing tool seems to be the most powerful incentive for builders to join GBH.

Responses of Code Officials/Planners/Politicians

Local politicians have been a driving influence behind the green building movement in Madison. The mayor of Madison is seeking to have all city building LEED certified and has created a ‘green team’ to provide recommendations on energy efficiency, infrastructure improvements, and green building. These recommendations have been accepted by the city council and codified in the report *Building A Green Capital City: A Blueprint for Madison’s Sustainable Design & Energy Future*.⁴⁶ Local code officials have been neutral toward green building. The voluntary nature of the program means that building code officials are not involved in the process.

Responses of Public/Consumers

Reaching the public has been one of the largest hurdles to the success of the Green Built Home program. Ashleigh Ellingson, program assistant for Public Outreach at GBH, described the public as “originally leery of the program,” but stated, “awareness has grown due to outreach.”⁴⁷ Public acceptance of and demand for green building practices are key to the program’s success.

⁴⁴ Telephone interview with Mark Hopkins of The Mandel Group.

⁴⁵ Telephone interview with Leon Church, president of Sweetwood Builders.

⁴⁶ Available on the web at http://webapp.cityofmadison.com/sustainable_design/index.html

⁴⁷ Telephone interview with Ashleigh Ellingson of Green Built Home.

Case Study #3

Boulder Green Points Program, Boulder, Colorado – January 2006

PROGRAM STRUCTURE

During the 1970's Boulder enacted a series of energy conservation and growth management policies. This was followed in 1980 by Energy Option Points, which gave faster approval to plans incorporating energy conservation techniques. The Green Building Points program, as it now exists, was initiated in 1996. Community leaders provided much of the leadership necessary to create this program, and the Chief Building Official, Director of Environmental Affairs, Boards and Commissions Council and the Planning/Development Directors are all heavily involved.

The Green Points Program (GPP) is a mandatory program administered by the City of Boulder's Department of Environmental Affairs. The program requires all residential construction of more than 500 sq. ft. to receive a certain number of green points. The number of points that a project must receive is tied to the size of the project. Initially, the program applied only to new construction. However, 80% of construction in this area is remodeling/renovation, so in 2001 the GPP was expanded to include additions and renovations. At the same time, the program was intensified by requiring more green points for any given project.⁴⁸ This program is not a certification, instead the green point requirement is a part of the building code, and no project can receive approval without the proper number of green points.

Public outreach is seen as an important element of the Green Points Program. Workshops and training sessions are offered to anyone interested in becoming Green Points Certified. Green Points certification is necessary because some points are self-certified. Those in the GPP also see educating the consumer as an important part of promoting green building. With such education, consumers will be able to better discern between conventional and green building and will demand that their homes be as green as possible.

EFFECTS OF THE MANDATORY NATURE OF THE PROGRAM

The Green Points Program does not provide any direct incentives. However, the mandatory structure of the program affects the nature of green building in Boulder.

1. GPP's mandatory nature requires all builders to become familiar with green building practices, thus it may have provided a temporary benefit to those already engaged in green building when the program was initiated.
2. By tying the number of points required to the size of the project, GPP provides an incentive for many builders to focus on smaller projects where acquiring the required number of green points is a simpler task.
3. By having only a single level of recognition, GPP provides an incentive for builders to do only what is necessary to receive approval rather than to strive for the maximum benefits that can be realized in a project.

HOW IS 'GREEN BUILDING' DEFINED?

A review of the points available through the Green Points Program reveals a program with a broadly conceived idea of Green Building with five main areas of focus.

⁴⁸ From telephone interview with Elizabeth Vasetka, Environmental Coordinator for the Boulder Green Points Program

Recycling - Points are allotted for both the recycling of construction debris and the use of recycled materials.

Water Conservation - Points are provided for efficient fixtures and appliances as well as drip irrigation and the use of xeriscaping (landscaping requiring little water). This is particularly important given Boulder's dry climate.

Energy Efficiency – Points are provided in areas including appliances, insulation, and a large concentration of points for photovoltaic panels.

High-performance Building Materials – Points are provided for materials that have great durability, use little virgin material, and tend to be non-toxic.

Indoor Air Quality - Points are provided for both non-toxic materials and air filtration devices.

SUCCESSFUL STRATEGIES

The Green Points Program has been successful in moving green building from a niche market to the standard in the Boulder area over the past ten years. The mandatory nature of the program ensured that green building practices would be taken up, regardless of an individual developer's interest, and also provided homebuyers with the assurance that their home had substantial green aspects. Now, all residential developers in Boulder are green builders, although some may pursue green building strategies more than others.

The GPP also succeeded in providing the education and training necessary for the developers in the Boulder area to work with the Green Points system. At least one developer cited the seminars provided by the GPP as “extremely helpful,” and “very professional.”⁴⁹ These seminars helped developers to adjust to the new system with greater ease than would have been possible otherwise. GPP continues to provide these seminars as well as phone support.

The GPP has also had measurable success in terms of energy efficiency. According to Elizabeth Vasetka, the Environmental Coordinator of the GPP, the average energy efficiency of structures built under the Green Points Program is 30% greater than what it would be under ICC2000 code.⁵⁰ This shows the powerful impact that the GPP has made.

CHALLENGES FACING PROGRAM

Funding

Funding is one of the largest challenges facing the Green Points Program. The city must provide the resources for ensuring compliance, inspection, measurement, follow-up and education. Currently, GPP is funded through the trash tax, as are most of the environmental programs in Boulder. No additional fees are charged to developers and currently none of the building permit fee goes to the program.

The inspection process is one aspect of the GPP in particular need of greater funding. Currently some points of GPP are self-certified. Greater funding would allow these points to be verified by an inspector as well.

Interaction with Builders

Interaction with builders still presents a challenge to the GPP. Initially, many developers were resistant to the more stringent standards required by the GPP. This continues to be a

⁴⁹ Telephone interview with Peter Weber of Coburn Development.

⁵⁰ Telephone interview with Elizabeth Vasetka, Environmental Coordinator for the Boulder Green Points Program.

problem each time that the GPP raises its standards, as it did in 2001. The GPP has also found that its system leads builders to apply for only the basic number of points that they need, even when they are eligible for more points. This makes it difficult to track the progress of the program and means that few projects exceed the basic standards.

Maintaining the Points System

Green building is a technical subject and requires a highly trained staff. There is a need to integrate the planning staff into the GPP and to keep them educated on the changes in the field without overtaxing them. The points system also has to be constantly reviewed to make sure that it is effective and continues to drive innovation. One example raised by a builder is that a point is provided for an exhaust fan in the garage, but a point is not provided for having no garage.⁵¹ Keeping the staff up to date, constantly reviewing the guidelines, and at the same time processing applications in a timely manner is essential to the continued relevance of the GPP.

AREA CHARACTERISTICS

Boulder is considered a highly desirable location. Its population grew from 225,339 in 1990 to 291,288 in 2000, an increase of 29.3%. Boulder is also more densely developed than the surrounding areas, and has an affluent, well-educated, and environmentally conscious population. Most of the housing stock is older, with much of it built in the 1930's and 40's, and 80% of building applications are for renovation and remodeling.

Boulder is also known as a heavily regulated environment. It has an urban growth boundary and is working to preserve open space in a dense, urban environment. Some developers avoided Boulder even before GPP because of the regulatory environment. However, those developers who have worked in Boulder are now finding that the many in the surrounding communities are now demanding green building as well.

GREEN BUILDING IN BOULDER

Only residential development is covered under GPP, but Boulder also requires that new public buildings be LEED certified. In the residential market the competition amongst builders has lowered the costs charged to consumers for green buildings. Similarly, the price for green construction materials has also fallen in the Boulder area over the past 10 years. Developers are also careful to choose the points that are the least costly to implement. Homebuyers in Boulder seem to be willing to pay more for green amenities, but according to Pete Weber of Coburn Development, many customers would still "rather have granite countertops than energy efficient appliances."⁵²

RESPONSE TO PROGRAM

Responses of Developers

Developers and subcontractors were seen as initially resistant to the Green Points Program. They perceived the green building requirements as expensive and time consuming, an additional unwanted regulation. However, ten years of experience with the program has gradually changed this attitude. Some developers still find the regulation arduous; however the outreach and education efforts of GPP have won over many of the developers in the area. At

⁵¹ Telephone interview with Peter Weber of Coburn Development.

⁵² Telephone interview with Peter Weber of Coburn Development.

least one developer sees the GPP as providing a level playing field for all developers in the region.⁵³

Responses of Code Officials/Planners/Politicians

Community leaders and local politicians were the driving force behind the creation of the GPP. Initially there was some reluctance among the building inspectors because of the extra work involved in GPP inspections and the additional training needed to carry out the inspections. Now the process is considered routine, although funding constraints mean that some aspects of the GPP are self-certified and rely on the honor system. Support for the program is not unanimous, however. Corey Schmidt, Chief Building Inspector for Boulder, would prefer a voluntary program. He has stated that the money required for training inspectors and maintaining the code could be better spent on educating the public and helping to promote green building.⁵⁴

Responses of Public/Consumers

Builders, Municipal Officials, and those at the GPP all tended to see the public as needing more education about green building. The consumers are the key to getting the builders to go beyond the minimum requirements. If consumers are better educated about green amenities and are asking for them, then the building community will follow suit.

⁵³ Telephone interview with Peter Weber of Coburn Development.

⁵⁴ Telephone interview with Corey Schmidt, Chief Building Inspector for Boulder.

2.2 Analysis of Case Studies

The case studies of the green building programs reveal three perspectives from which to view the programs and the green building movement in general. These three perspectives are those of the homebuyers/general public, the developer, and the municipal or local government. Each of these three parties has different costs and benefits associated with green building and so has a different relationship to green building.

Builders operate on a profit motive. This is not to say that other concerns are not important to builders, but if they cannot make a profit they will not stay in business. Thus, one of the primary concerns of builders regarding green building is its profitability. Builders consistently expressed concerns about the additional costs associated with green building and their ability to recover those costs from customers. The other primary concern that builders expressed was having to change building practices to participate in green building programs. The Green Built Home project seemed to have some success overcoming this problem by working very closely with the Madison Area Builders Association, but this has also led to concern that the Green Built program is too close to the home builders.

The homebuyer's and the general public's perspective on green building is similar to the builders in that they both seem to think that green building is the 'right thing to do,' but homebuyers seem to want the 'right thing' at no extra cost. Several developers said that homebuyers would choose cosmetic improvements such as granite countertops or fancy hardware over green building. Despite their unwillingness to pay for green building, homebuyers seem to be increasingly interested in acquiring green homes and green products. EarthCraft has succeeded in making itself a household brand in the Atlanta area to the point where green products are marketed in local Home Depot's with the EarthCraft label. This program has put a great deal of effort into public outreach and it seems that the public is responding. More than 2000 EarthCraft Homes have been certified and over 1000 units of multifamily homes, both market rate and affordable, are currently being certified. The lower utility costs provided by green construction are appreciated by all of the tenants/homeowners, but are particularly important for those living in affordable housing. Green building offers most of its benefits to the owners/tenants of the buildings but it is clear that public outreach and education are needed to make them aware of these benefits.

The municipal perspective on green building programs depends largely on the nature of the program and the commitment of the government to the principles of green building and sustainability. The Green Points program is mandatory and is administered by the Boulder Department of Environmental Affairs. This program is endorsed by the municipal administration and is funded by tipping fees on household waste. This requires a consistent commitment to the principles underlying green building. This type of program, while rare, has had the effect of making green building the standard in the Boulder area. This has created a level playing field for developers in the area and has also created a pool of developers who now ply their green building skills in the surrounding area. It has also lowered the costs of green building materials in the area as the demand increased. This program had the strongest municipal support of the programs. In Atlanta much the opposite was true. The EarthCraft program does not have the endorsement or support of the local government and they often find the municipal inspectors

to be obstacles. EarthCraft has had to devote considerable efforts to educating local officials and inspectors because of this lack of support. If the local government supports the green building program it is a considerable aid to the program, particularly if the local officials are educated about the differences between conventional and green buildings so that they do not reject green innovation out of hand.

A new emerging pattern as evidenced in the initial interviews and case studies is the addition of a multi family, or community scoring checklist. EarthCraft currently offers a multifamily checklist and a new certification program “EarthCraft Communities”. Green Built home is in the process of creating one. Green Points is subject to renewal in 2006, at this point it too intends on looking beyond home building in isolation. New multi family programs such as EarthCraft Communities will address sustainability issues such as sprawl, water quality and conservation, multi-modal transportation, energy and materials consumption, green space preservation and community education.⁵⁵

One particularly interesting finding from the interview responses of **Figure 7** is that many local programs have taken on the sacred cow issue in green home building – supersized homes. For example, Vermont Builds Greener compares the amount of bedrooms to the amount of occupants in the home in its rating system. Within Built Green Colorado, as the size of the house increases more checklist items become mandatory and more points are needed to acquire a permit. Wisconsin Green Built Home has an “efficiency of space” category that encourages homeowners to build ‘up’ rather than ‘out’-- appealing to both green building and smart growth rationale.

2.3 Affordable Green Housing

A final section addresses briefly the roles of information and incentive in affordable green housing initiatives. It would appear that these initiatives have available to them a full range of policy tools, including an ability to leverage existing programs. For example, for many disparate states, the Housing Credit program is an important and successful (federal) program. A recent work on affordable green housing assigns as its signature strength the “Qualified Allocation Plan” (QAP). The QAP sets the criteria for allocating Housing Credits, basing them on a variety of factors which for many states has come to include sustainable building and/or its components (Tassos, op cit). Specifically, the referred work analyzes elements in states’ 2005 Housing Credit allocation plans that support three areas of green building: site location, energy and resource use and environmental/indoor air quality.⁵⁶

Many states themselves originate incentives for green affordable housing. In Georgia, the Department of Community Affairs, Housing Finance Division offers enhanced down-payment assistance for low- to moderate income homebuyers who purchase homes built to the Earth Craft green building standard or for Energy Star Homes. This consists of a \$7,500 deferred repayment, interest-free second mortgage, to be repaid upon the sale or refinancing of

⁵⁵ Interview with Elizabeth Robbins

⁵⁶ Unfortunately, the report misrepresents N.J. in two areas in missing: 1) its requirement for Energy Star and 2) requirements of Green Homes (Kasabach, April 29, 2005 electronic communication).

the home. This amount can be used for closing costs, prepaids, down-payment or principal reduction, but must be used with the low income mortgage product offered by the DCA.⁵⁷

The New Jersey Housing and Mortgage Finance Agency has also developed some innovative programs to forward green building in the affordable housing sector. In 2006, a new program called SUNLIT was developed, which creates logistical and financial feasibility for multi-family affordable housing developments to install solar electric systems, the first program of its kind in the country. HMFA also created a set of critical design criteria in their Special Needs Design Guidelines that requires all HMFA financed Special Needs housing developments to consider a series of critical design issues, including green building. Finally, NJ Green Homes provides financial incentive of up to \$7,500 per unit for compliance with the affordable green housing program and will shortly provide up to \$10,000 per unit. The NJ Qualified Allocation Plan has had Energy Star as a threshold since 2003. One additional point on the 2006 QAP is now available for either successfully completing DCA Green Homes Office Affordable Green Program or for incorporating solar energy to cover the common area electricity of the development.

Specifically, the New Jersey Affordable Green (NJAG) Program offers technical and financial assistance, as well as advocacy and education programs to encourage the use of green technologies in New Jersey's homes. The only statewide green affordable housing program in the country, the program is a national model for green affordable housing and has worked to increase the use of innovative green materials and design and building technologies in over 2,000 affordable homeownership and rental units in the State. Its success has led to rules that will require developers of all affordable housing units within the State of New Jersey to meet minimum green requirements, with the option to receive additional funding to develop a higher threshold of green affordable housing units.

In an attempt to continue to raise building standards and create a consumer demand for efficient, healthy and environmentally responsible homes, the GHO is developing the New Jersey High Performance Homes Plus Program for market and production rate builders (non-affordable). NJHPH is a comprehensive and voluntary residential construction rating program that will advance high performance home building and renovation in New Jersey. The program will establish a state green building standard and promote whole system, energy efficient building practices among builders and educate consumers about the advantages of these features in their homes. The program will coordinate with other national green building programs to address and emphasize bioregional issues and provide New Jersey builders and residents with a one of a kind program tailored to the specific needs of the State. Additional policy initiatives are itemized below.

New Jersey offers additional point on the 2006 Tax Credit QAP for Green/Solar technologies

The Green Homes Office coordinates with various groups, including state agencies, municipalities, public/private and non-profit organizations to develop green policies and facilitate the construction of exceptional, national examples of green housing. One such initiative includes working with New Jersey's Home and Mortgage Financing Agency to offer an

⁵⁷ Interview with Jane Massey, GA DCA, Housing and Finance Division. 5.10.05

additional point for green building and/or solar technologies on the 2006 Low Income Housing Tax Credit Qualifying Allocation Plan. This extra point provides valuable incentive for affordable housing developers to build to “premium” green standards.

New Jersey Green Building Primer

The GHO has taken an active and aggressive role in green building education directed to design professionals, builders, developers, schools and municipal officials. The GHO is developing a Green Building Primer for New Jersey municipalities that will illustrate the benefits of green building practices and offer resources to municipal officials on how to implement sustainable, green development principles and policies into their township.

Another opportunity for affordable green housing resides in a plethora of potential partnerships between state agencies and not-for-profit ones organizations. For example, Metro-Dade County, Florida, like Green Homes DC, is working with Habitat for Humanity and other partners to plan and develop an energy-efficient and environmentally sound low-cost housing development. Global Green USA, through its Greening Affordable Housing Initiative (GAHI) also collaborates with Habitat for Humanity, in California. In the areas of information and incentive, GAHI has held a design charrette for Los Angeles affordable housing developers, provides technical assistance to non-profit developers, conducts a national workshop series and develops and advocates for various policy initiatives that would include green criteria in them – e.g., the California Tax Credit Allocation Committee Guidelines and the Los Angeles Trust Fund.⁵⁸

⁵⁸ Globalgreen.org

PART THREE - THE FUTURE OF GREEN BUILDING IN THE U.S.

A number of green building programs and government policy initiatives are being adopted and implemented across the United States. However, widespread green building has not yet resulted, with the notable exception of energy efficient systems.⁵⁹ The barriers to the adoption of a more comprehensive model of green building include confusion as to: what it is – there are ‘10 Shades of Green’;⁶⁰ its overall costs and benefits -- there are numerous and conflicting studies on the costs and benefits of green building, but almost all conclude that there are extra costs;⁶¹ conflicts between green building and established building code,⁶² and a lack of demonstration projects that provide tangible “how-to” information in order to reduce the real or perceived risk of adoption. As a result of the gap between the first costs and life cycle returns, the barriers to green building extend beyond the construction industry into overlapping industry sectors such as insurance and finance.

The current market may also prove to be a barrier to the adoption of a more comprehensive model of green building. As interest rates rise and housing appreciation and sales begin to slow, financing for green building may become increasingly difficult. Furthermore, lenders often require that equity be invested before loans are granted. This is often a problem for green building projects championed by mission-driven organizations – e.g., affordable housing. Even with mainstream builders, obtaining financing for green projects can entail a risk premium.⁶³ In this light, the USGBC’s claim to be on the brink of a major market transformation may be premature. Certainly, many ingredients for success have been placed into the mix, including the high profile of government-owned and institutional buildings, which plays a crucial role in demonstrating green building. The open question, however, is the extent to which the private sector will adopt green building.

⁵⁹ In addition to the millions of energy efficiency upgrades made by homeowners each year, over 360,000 homes in the U.S. have earned the U.S. DOE’s Energy Star label and the department’s Building America program, which requires a minimum of 30% reduction in energy for heating, cooling, and hot water has produced more than 20,000 new houses. Schendler and Udall, *LEED is Broken...Let’s Fix It*.

⁶⁰ See Benson, *Branding Green*.

⁶¹ (Schendler and Udall, *LEED is Broken...Let’s Fix It*). On a related note, a hot debate these days is over the direct and indirect costs incurred for LEED certification (Schendler and Udall, *LEED is Broken...Let’s Fix It*).

⁶² This is a big topic about which David Eisenberg (City of Tucson) and Dennis Sims (International Code Council) spoke at a session at the November conference of the USGBC. Many of their findings are summarized in a related work. (Eisenberg, David. Creating a Systemic Shift to Sustainability for the Building Industry: A Working Paper. Tucson, AZ : Development Center for Appropriate Technology.

⁶³ Kusmick, 2004; unpublished manuscript.

One study identifies the characteristics of home building firms more likely to be associated with an increased propensity to adopt new products, materials and/or practices in home building.⁶⁴

The types of home building firms most likely to be early adopters were:

- Modular builders and multifamily builders.
- Single-family custom home builders.
- National and regional builders.

These more innovative firms were also more likely to:

- Have a technology advocate within the building firm.
- Stress the importance of being creative and the first to use new products.
- Use technology transfer programs like the Partnership for Advancing Technology in Housing (PATH) and universities.
- Use union labor at least sometimes.

These firms also stressed the importance of:

- Homebuyers who are aware of and want new products and materials.
- Reliance on established manufacturers standing behind their building and construction products.

The types of home building firms that wait until new products, materials, and practices have been around much longer were more likely to be local firms and single-family production builders.

These later adopters also were more likely to:

- Emphasize marketability and profit.
- Associate the firm's success with land development.
- Emphasize the "tried and true" and the risks of new materials and products.

These findings help to explain which builders would be interested in adopting the new technologies and processes embodied in green building. Clearly modular and multifamily home builders, particularly those who function at national and regional scales, would be the most likely to lead an effort to promote green residential construction. These builders will have an easier time integrating new technologies and practices and will be open to new methods, which could expand their markets. These homebuilders may prove to be early supporters of green building, and having these builders on board may convince more conventionally minded builders to join in.

⁶⁴ Center for Housing Research Virginia Polytechnic Institute and State University Blacksburg, Va and NAHB Research Center, *The Diffusion of Innovation in the Residential Building Industry*.

As we have seen, strategic partnerships may also play a role in acquiring the support of homebuilders. Perhaps most significantly, to reach beyond potential ‘early adopters’, the NAHB has partnered with a not-for-profit, the Green Building Initiative (GBI)⁶⁵ to disseminate information about the NAHB guidelines to its members. GBI plans to visit with member HBAs in geographic locations where it feels that green building is needed most and where programs for it do not already exist. High population (density) and HBA receptivity were named as determining factors. For 2005, target markets included: Little Rock, AK; Albuquerque, NM; Raleigh/Durham, NC; Albany/Syracuse, NY; Hartford, CT, Richmond, VA, Naples, FL, Detroit/Southfield, MI; Dallas/Ft Worth, TX; and Baltimore, MD. According to Rich Dooley of the NAHB, 20 of its 800 member HBAs already have indicated an interest in the program based, partially, on their exposure to it at NAHB events. (The NAHB has about 220,000 members.)

According to theories on the diffusion of innovations, familiarity with an innovation and participation in social networks predict positively for adoption. Specifically, for adoption of something with mainly private or personal consequences, information that is obtained from peers located in social and organization networks is considered to be more powerful than information obtained from media sources or scientific reports, generally associated with adoption of something with mainly public consequences. This dynamic, it seems, describes the roles of both the NAHB as well as the USGBC, whose activities bring together building professionals around green building.

On the other hand, for adoption of something with mainly public consequences information that is obtained from non-relational sources may be more efficacious. The USGBC, in fact, in speaking the language of ‘market transformation’ and in targeting all sets of actors involved in green building relies heavily on non-relational informational sources. The organization also works diligently to mitigate inhibiting factors to green building, especially institutional barriers like construction code.⁶⁶ In this role the USGBC is a powerful vehicle for convincing government leaders and the general public to support green building, and similar efforts could be orchestrated on a local level to reach the local populace and officials.

The challenge for local and state policy-makers is to develop and implement and/or to support green building programs that appeal to builders, homebuyers, and municipal officials. In this task, both relational (network-based) and non-relational (media, scientific reports) are likely to prove helpful. While a program strategy will assume different forms in different places, the consensus of the movement’s participants is that the following steps help to gain market acceptance among developers (USGBC State and Local Committee, November 2004).⁶⁷

⁶⁵ See GBI.org. Note, GBI owns the Green Globes rating system. It is an on-line tool and claims to be similar but less expensive than LEED. Information about GBI’s marketing plans are the result of a personal interview by the author of the GBI at the NAHB Green Building Conference in Atlanta in 2005.

⁶⁶ There is an active Codes Committee led by a well-known researcher and commentator on building codes, David Eisenstein.

⁶⁷ Author’s notes from conference.

- Find smaller projects first through which to break down barriers
- Bring together various programs (state or local level) or ordinances (local level) and place under one umbrella/coordinator
- Look for pressure points – pressing environmental issue to solve. Using this to piggy back a larger solution.
- Use these same issues to lobby for incentives – e.g., if water efficiency, incentives could come from the water company, if energy...and so on. Money creates interest!
- Hire a change agent (this is different than a champion, which comes from elected or non elected leadership)
- Provide cost/benefit studies and technical information, especially how-to process models and demonstration projects

Concurrently, it is important to education consumers and municipal officials about green building. The programs that have been most successful in educating consumers have developed themselves into a household “brand”. The municipal perspective on green building programs depends largely on the nature of the program and the commitment of the government to the principles of green building and sustainability. If the local government supports the green building program it is a considerable aid to the program, particularly if the local officials are educated about the differences between conventional and green buildings so that they do not reject green innovation out of hand. Finally, policy leaders in green building need to be cognizant of market area characteristics. Most market-rate residential green building has taken place in economically strong markets in areas that are well above the U.S. average in income and educational attainment.

Often, successful green building programs are evolved from energy efficiency and smart growth concerns. This may be of particular interest for New Jersey. Based on the data presented here, it does seem likely that an opportunity exists for increased cross-pollination and leverage between green home programs and these existing state and local policy initiatives.

Appendix A. Green Home Building Programs

Alameda County Waste Management Program San Leandro, CA (510) 614-1699 www.stopwaste.org/multigreen	GreenHOME, Washington, DC (202) 544-5356 www.greenhome.org
Alliance for Green Development Albuquerque, NM (505) 269-2969 www.greenalliancenm.org	Green Home Program Hudson Valley, NY (800)-638-8556 www.hvbuilder.com/Hudson_Valley_Green_Builder.asp
Arlington County Green Home Choice Program Arlington, VA (703) 228-4792 www.arlingtonva.us	Green Home Program New York City, NY
Bay Area Build It Green Oakland, CA www.build-green.org	Green Home Program Schenectady, NY (518) 355-0055 www.crbra.com/index.html
Building America Nationwide (202) 586-9472 www.eere.energy.gov/buildings/building_america/	Green Points Program Boulder, CO (303) 441-3090 www.ci.boulder.co.us/environmentalaffairs
Build San Antonio Green San Antonio, TX 210-224-7278 www.buildsagreen.org	Hawaii Built Green Honolulu, HI (808) 847-4666 x210 www.hawaiibuiltgreen.com
Built Green Colorado Denver, CO (303) 778-1400 www.builtgreen.org Aspen/Pitkin Green Building Program Telluride Green Building Program	I-Built Arizona (928) 779-3071 www.nazba.org
Built Green King & Snohomish Co King and Snohomish Counties, WA (425) 460-8230 www.builtgreen.net	North Carolina Healthy Built Homes Program Raleigh, NC 919-513-0307 www.ncsc.ncsu.edu/programs/North_Carolina_HealthyBuilt_Homes_Program.cfm

An Analysis of Residential and Local Green Building Initiatives: The Roles of Information and Incentive

Built Green Kitsap Kitsap County, WA (360) 479-5778 www.kitsaphba.com/bbk.html	NJ Green Homes Trenton, NJ (609) 292-3931 www.nj.gov/dca/dhcr/hsg_prog/njgreenhomes.shtml
Built Green of SW WA Clark County, WA (360) 694-0933 www.builtgreennw.com	Portland Green Rated Portland, OR (503) 823-7725 www.green-rated.org
Build Green Program Kansas City, MO (816) 942-8800 www.kchba.org/buildgreenkc	San Jose Green Building San Jose, CA (408) 277-4111 www.ci.san-jose.ca.us/esd/GB-HOME.HTM
California Green Builder Program Sacramento, CA (916) 443-7933 www.thebii.org/cgbp.asp	Santa Barbara County Planning and Development Santa Barbara County, CA www.countyofsb.org/plandev

An Analysis of Residential and Local Green Building Initiatives: The Roles of Information and Incentive

Earth Advantage™ Portland, OR (888) 327-8433 www.earthadvantage.com	Southern Green Building Alliance Tucson, AZ (520) 624-6628
EarthCraft House Atlanta, GA (404) 872-3549 www.earthcrafthouse.com	Sustainable City Cambridge, MA
EcoBuild Memphis, TN (901) 528-4748 www.mlgw.com/SubView.php?key=about_ecobuild	Sustainable City Maryland
Florida Green Building Coalition (239) 263-6819 www.floridagreenbuilding.org	Sustainable Design Hennipin County, MN www.sustainabledesignguide.umn.edu
Green Building Program Frisco, TX (972) 335-5555 www.ci.frisco.tx.us/developmentsvcs/greenbuilding/greenbuilding_home.htm	Tacoma Built Green Tacoma, Pierce County, WA (253) 272-2112 www.mbapierce.com
Green Building Program Austin, TX (512) 505-3700 www.ci.austin.tx.us/greenbuilder	Vermont Builds Greener Vermont (800) 893-1997 www.bsr-vt.org
Green Building Program Scottsdale, AZ (480) 312-7080 www.scottsdaleaz.gov/greenbuilding	Western NC GBP Asheville, NC (828) 232-5080 www.wncgbc.org
Green Built, Inc. Grand Rapids, MI (616) 281-2021 www.hbaggr.com	WI Green Built Home Madison, WI (608) 280-0360 www.greenbuilthome.org

Appendix B. Interview Questions and Responses

1. Is program affiliated with a broader municipal, county, or regional green building or sustainability initiative? If so, what is it?
2. Are there financial incentives available for green building? Any non-financial ones? (e.g., density awards, expedited permitting process, etc.)
3. What works well about the green building development process relating to these incentives? What works poorly? What would you change?
4. How often are these incentives used?
5. What about the provision of information and/or technical advice? Does it happen/how/through whom?
6. Used often?
7. What has been the development community's reaction to this green building program and/or green building in general? Builders? Others?
8. Are you familiar with other green building programs and local initiatives? Which ones? Anything very special about them that you would hope to incorporate? Do you interact with other programs at conferences, etc? Which ones?
9. How did this program get started? Did it require strong elected official leadership? Did a not-for-profit provide the leadership?
10. What do you see for the future of green building in ____ (place name)?
11. Does the program have specific target numbers, or other goals?
12. How many homes have been certified by your organization? How is this measured? (Ex. Annual, monthly, by project)
13. What size developers are affiliated or sponsored by your organization? Is there reasoning behind working with a certain size of developers?
14. How is compliance within your organization measured? Is some form of "rating system" in place?
15. If your certification process is governed by a rating system, what would motivate a participant to strive for the highest level of compliance rather than just meeting the minimum requirements?

Vermont Builds Greener

(800) 890-1997

Contact:

Jeff Gephart, Vermont Builds Greener (VBG), Vermont Energy Star

Program Affiliations:

Program affiliated with Energy Star program, looking into affiliation with LEED

Target Market:

Participants work mostly with market-rate single family homes and town homes. Multifamily housing and affordable housing are not part of the program.

History:

VBG is a new all-volunteer organization started in October 2004. It currently has 3 or 4 registered participants in the building industry

Information/Technical Assistance:

Yes, it is available. All participants receive scorecard upon enrolling.

Rating System:

Builders can qualify homes for the Energy Star Rating system. They can take this certification further by meeting VBG's criteria which go beyond energy efficiency by addressing lighting and indoor air quality. Ratings are achieved through a scorecard. Rating system is not broken down into levels of compliance.

One unique component for this scoring is that the program compares the number of bedrooms to number of occupants in the home. For example, if a home meets all criteria but has 5 bedrooms and only 2 occupants, it will count negatively.

Financial Incentives:

Incentives in the range of \$160-\$1,300 are available through the organization. The local gas utility company offers a \$500 incentive. The local electric company also offers a small incentive.

Community Reaction:

Builders fear the term "green." However, they are more comfortable with making a home "energy efficient."

Funding:

Builders must pay a \$450 fee to participate. VGB also received a grant from the state. In addition, the state contributes a small labor force to help start the program.

Noteworthy Building Programs:

Austin, Texas

Success Metrics:

For the year 2005, VBG has certified 394 homes.

Wisconsin Green Built Home

(608) 890-1997

Contact:

Ashley Ellingson, Program Assistant, Outreach, Public Education

Program Affiliations:

Program affiliated with Madison Area Builders Association

Target Market:

Private homeowners; all sizes of builders are affiliated. Meridian Homes, Wisconsin's largest home builder, is a member. All of Meridian Homes are certified, meeting 93 of the 300 total points.

History:

Wisconsin Green Built is an office of three, formed in 1999. Wisconsin Green Built currently has about 50 builders affiliated with their organization.

Information/Technical Assistance:

Yes, it is available. Other than the scoring criteria, a written source is currently in production.

Rating System:

Builders receive a checklist totaling 300 points; 60 points are needed for certification. "Efficiency of space": A new category offered in 2005; encourages homeowners to build "up" rather than "out." Points are earned if homeowner chooses to add square footage within the existing footprint of home rather than make the footprint larger.

Financial Incentives:

No financial incentives are in place.

Community Reaction:

Homeowners usually feel as if using green building practices will equate to a higher cost and sacrifice aesthetic appeal. Wisconsin Green Built would like to work on this misconception.

Funding:

Builders must pay a \$200 fee to participate and a \$50 fee per home.

Noteworthy Building Programs:

Austin, Texas, for its extensive online offerings; Denver, Colorado; and EarthCraft in Georgia.

Success Metrics:

For the year 2004, 800 homes have been certified; goal is 1,000 homes for 2005.

Ecobuild

(901) 528-4748

Contact:

Becky Williamson, Administrator

Program Affiliations:

Program affiliated with Memphis Light, Gas & Water (MLGW)

Target Market:

Open to any builder or contractor. All types of housing are targeted.

History:

Ecobuild was founded two years ago by the MLGW.

Information/Technical Assistance:

Yes, it is available. Ecobuild offers technical assistance in the field in addition to online assistance.

Rating System:

Builders must comply with 100 percent of a checklist given prior to construction. Additionally, after construction they must pass a duct leakage test of 10 percent or less.

Program plans on initiating a modified fee structure that penalizes re-inspections of homes. Program will be updated soon to require AC units to have a SEER rating of 12.

A redevelopment area north of downtown known as “Uptown” will be entirely certified by Ecobuild. This can make it one of the 10 largest green communities in the country.

Financial Incentives:

An incentive is open to developers who create an entire neighborhood of Ecobuild homes. The utility and connection fee of \$865 per unit will be waved.

Community Reaction:

This program deals directly with builders and developers rather than homeowners. They have difficulty with builders properly installing cooling systems per their trade manual. Working to alleviate this simple issue would save on cooling costs.

Funding:

Builders must pay a \$300 fee to participate.

Success Metrics:

Although only 12 homes have been certified, this newer program hopes to certify 150 homes per year.

Built Green Kitsap

(360) 479-5778

Contact:

Art Caspla, Executive VP and Becky Williamson, Administrator

Program Affiliations:

Home Builders Association, Kitsap County, Washington State

Target Market:

New homes, remodeling and commercial buildings. All builders are very small. The largest builder may build 25 homes per year.

History:

Built Green is one of the oldest local green organizations in the United States, founded in 1997.

Information/Technical Assistance:

Participates in “Parade of Homes,” publicity articles to educate consumers.

Rating System:

Rating system of 1, 2, or 3 stars. Home builders strive to earn higher ratings to make their product more marketable. There are 4 separate lists—one for new homes, one for remodeled homes, one for light commercial, and another for subdivisions.

Financial Incentives:

Kitsap County has a very small population that has suffered a downturn in the economy since the closing of various military bases. Some small financial grants are subsidized by the HBA.

Community Reaction:

Mr. Caspla is confident that more builders are complying with the rating system within Kitsap County but that they are not filling out the paperwork to become certified. He feels that the paperwork required is an obstacle holding builders back from participating.

Funding:

Funding achieved through membership fee and through the solid wastes department. According to the organization’s Web site, funding has also been provided by the Home Builders Association of Kitsap County, the Kitsap County Public Works, and Washington Department of Ecology.

Green Points Program

(303) 441-3090

Contact:

Elizabeth Vasetka, Environmental Coordinator

Program Affiliations:

City of Boulder, Colorado Office of Environmental Affairs

Target Market:

All homes and all builders

History:

Originated in 1996 this municipal ordinance mandates participation in the Green Points Building Program in order to receive a building permit. Prior to 1996, this program was limited to new construction. Now, it applies to all construction.

Information/Technical Assistance:

A 4-hour training session and a test are mandatory for all area builders. The Boulder Green Building Guild also offers information sessions once a month.

Rating System:

No rating system in place. Green Points are part of the code in Boulder. The number of points needed rises with the total square footage of the home.

Community Reaction:

Community is meeting current guidelines. These guidelines will be renewed in 2006 to include aspects beyond home building including water, energy, and waste management.

One of the biggest difficulties is getting people to realize that the standards are in a constant state of change; therefore, labor practices will change too.

Funding:

Funding achieved through building permit fees and a trash tax.

Green Roundtable, Cambridge, MA

(617) 374-3740

Contact:

Dawn Graichen, Office Manager

Mission:

To encourage a dialogue between home builder associations and policy makers to promote healthy and efficient building through policy initiatives and educational assistance.

Three types of membership exist: individual, corporate, and public-sector groups.

History:

Program is approximately 5 years old; may perhaps be replicated by other cities, such as Seattle and Portland.

Rating System:

No rating system in place. Green Roundtable supplies education to make healthier buildings but does not certify buildings.

Services:

A resource center is open to municipalities and construction companies providing policy, education, and technical assistance.

Funding:

Funding achieved through membership contributions and grants.

Green Built, Inc., Grand Rapids, MN

(616) 281-2021

Contact:

Anne Dykema, Staff Liaison

Program Affiliations:

Affiliated with the local home builders association

Target Market:

All homes and all builders

History:

Program formed in 2001, modeled after Austin, Texas, program. Program now consists of 14 builders and 13 remodelers.

Information/Technical Assistance:

All builders are required to take a 3-hour class prior to receiving certification. Many educational opportunities are open to the general public throughout the year. Additionally, there is an annual "Parade of Homes."

Rating System:

The first 86 points of the system are based on the Energy Star program. An additional 120 points are available in a variety of categories. Builders can pick which categories to focus on.

Community Reaction:

Builders who participate in this organization have not found it difficult to comply with green design. The general public is more of a challenge. They must have interest in the product first, before the builder can deliver it.

Funding:

Funding achieved through building permit fees and a trash tax.

Financial Incentives:

No financial incentives are in place; however, an option is being explored to give incentives through mortgage companies.

Success Metrics:

Currently has 8 certified homes; goal is 25-30 annually.

Green Home Pilot Program

Schenectady, NY

Contact:

Margo Thompson, NAHB Research Center (301) 430-6242
Rita Sickley, Exec Officer Schenectady HBA (845) 562-0002

Program Affiliations:

Program will be affiliated with a local homebuilders association; to date, a local HBA has not taken this responsibility.

Status:

Program is still in draft phase as submitted by the NAHB research center. A point system will be in place. Whether there will be levels of qualification is still to be determined. At this point, generating interest among builders and architects. Five builders have become involved and are willing to participate if organization is created. Funding has yet to be determined.

Financial Incentives:

No financial incentives are in place.

Funding:

Buildings must pay a \$200 fee to participate and a \$50 fee per home.

Noteworthy Building Programs:

Austin, Texas, for its extensive online offerings; Denver, Colorado; and Earthcraft in Georgia.

North Carolina Healthy Built Homes Program

(828) 232-5080

Contact:

Matt Siegel, Green Building Coordinator

Program Affiliations:

Program is affiliated with the NC Solar Center, part of the State Energy Office. Grants are also received through the NC Department of Housing.

Target Market:

Affordable housing

History:

North Carolina Healthy Built Homes has been in existence for four years.

Information/Technical Assistance:

Yes, it is available. Other than the scoring criteria, a written source is currently in production.

Rating System:

Rating system is similar to LEED. Homes can achieve one of 4 levels— certified, bronze, silver, or gold.

Financial Incentives:

No financial incentives are in place.

Community Reaction:

Biggest deterrent at the moment is the \$900 fee per home. Since this organization works mostly with low-income housing, this cost is a substantial percentage of the overall cost of a home.

Funding:

Builders must pay a \$900 fee per home. This includes Energy Star certification costs, in addition to HVAC testing, and framing inspection.

Noteworthy Building Programs:

Program remains in close contact with EarthCraft in Georgia.

Success Metrics:

For the year 2004, 6 homes have been certified; goal is 30-35 homes for 2005. A large subdivision is in the process of certification, making this goal attainable.

GreenHOME, Washington, DC

(202) 544-5336

Contact:

Patty Rose, Executive Director

Program Affiliations:

Works with Habitat for Humanity

Target Market:

Affordable housing

History:

Started in 1999 as an all-volunteer organization focused on constructing demonstration projects to educate developers on affordable, sustainable design.

More recently their goal has been to:

1. Continue to construct and demonstrate sustainable, affordable housing
2. Focus on education and outreach in the building industry
3. Have an influence in policy making

Information/Technical Assistance:

Yes, it is available. Other than the scoring criteria, a written source is currently in production.

Rating System:

Rating system is not in place. GreenHOME works directly with developers, not homeowners.

Financial Incentives:

Looking into financial incentives for developers. Currently, a developer may not benefit from green building since payoff may be long-term. GreenHOME would like to implement a financial tool for developers during construction.

Community Reaction:

GreenHOME has targeted approximately 60 areas in Maryland, the District of Columbia, and Virginia for affordable sustainable housing. The community is a major concern. GreenHOME would like to avoid a potential NIMBY issue by establishing these 60 areas.

Program has encountered resistance by builders who would like to see immediate financial incentives. Even if new materials/technology do not require an additional cost, education of labor force does.

Funding:

Funding primarily through donations and purchase of their book, *Green & Lean*.

Noteworthy Building Programs:

New Ecology, Boston; Global Green, CA; Center for Sustainable Building Research, Minnesota; Virginia Sustainability Development Network.

Success Metrics/Future Goals:

In 15-20 years, GreenHOME would like to see affordable, sustainable housing commonplace, eliminating the need for this organization.

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Miscellaneous interviews as footnoted.